



SEQUENCE LISTING

10> Kimble, Judith E
Blelloch, Robert H

<120> Agent and Method for Modulating Cell Migration

5 <130> 960296.95386

<140> 09/321987

<141> 1999-05-28

<150> 60/087170

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10 <160> 2

<170> PatentIn Ver. 2.1

<210> 1

<211> 6659

<212> DNA

15 <213> Caenorhabditis elegans

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<221> CDS

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gct ctc ata ctc ctc gtc gtc tgc ctc gtt tat gcg ttg caa tca ggg 96
Ala Leu Ile Leu Leu Val Val Cys Leu Val Tyr Ala Leu Gln Ser Gly
25 20 25 30

agt ggc acg atc tca gaa ttc tca tca gat gtg ctg ttc tcc agg gcc 144
Ser Gly Thr Ile Ser Glu Phe Ser Ser Asp Val Leu Phe Ser Arg Ala
35 40 45

aag tac tca ggt gtg cca gtg cat cac agt cga tgg cgt caa gac gcc 192
30 Lys Tyr Ser Gly Val Pro Val His His Ser Arg Trp Arg Gln Asp Ala
50 55 60

ggt ata cac gtc atc gac agc cat cac atc gtc cga aga gat tct tat 240
Gly Ile His Val Ile Asp Ser His His Ile Val Arg Arg Asp Ser Tyr
65 70 75 80

gga cgt cgt gga aaa cgt gat gtc acg tca aca gat cgg cga cgt cga 288
35 Gly Arg Arg Gly Lys Arg Asp Val Thr Ser Thr Asp Arg Arg Arg Arg
85 90 95

ctc caa gga gtt gcc aga gac tgt gga cat gct tgt cac tta cga tta 336
40 Leu Gln Gly Val Ala Arg Asp Cys Gly His Ala Cys His Leu Arg Leu
100 105 110

| | | |
|----|---|------|
| | cga tca gat gat gcc gtc tac atc gtt cat ttg cac aga tgg aat caa | 384 |
| | Arg Ser Asp Asp Ala Val Tyr Ile Val His Leu His Arg Trp Asn Gln | |
| | 115 120 125 | |
| 5 | ata ccg gac tca cat aac aaa agt gtt ccc cac ttt tcc aat tca aat | 432 |
| | Ile Pro Asp Ser His Asn Lys Ser Val Pro His Phe Ser Asn Ser Asn | |
| | 130 135 140 | |
| | ttc gcg ccg atg gtc tta tat ttg gac tcg gag gag gag gtt aga ggt | 480 |
| | Phe Ala Pro Met Val Leu Tyr Leu Asp Ser Glu Glu Glu Val Arg Gly | |
| | 145 150 155 160 | |
| 10 | gga atg tct cga aca gat ccc gat tgt atc tac cgt gca cac gtt aaa | 528 |
| | Gly Met Ser Arg Thr Asp Pro Asp Cys Ile Tyr Arg Ala His Val Lys | |
| | 165 170 175 | |
| 15 | ggt gta cat cag cac agc atc gtc aat tta tgc gac tcg gaa gac gga | 576 |
| | Gly Val His Gln His Ser Ile Val Asn Leu Cys Asp Ser Glu Asp Gly | |
| | 180 185 190 | |
| | ttg tac gga atg ctt gca cta ccc agc gga atc cat acg gtt gag cca | 624 |
| | Leu Tyr Gly Met Leu Ala Leu Pro Ser Gly Ile His Thr Val Glu Pro | |
| | 195 200 205 | |
| 20 | att att agt gga aac gga aca gag cac gac gga gca agt cgc cat agg | 672 |
| | Ile Ile Ser Gly Asn Gly Thr Glu His Asp Gly Ala Ser Arg His Arg | |
| | 210 215 220 | |
| | caa cat ctc gtc cga aag ttc gat cca atg cac ttc aaa tcg ttt gac | 720 |
| | Gln His Leu Val Arg Lys Phe Asp Pro Met His Phe Lys Ser Phe Asp | |
| | 225 230 235 240 | |
| 25 | cat ctt aac tcg acc agt gtc aac gag acg gag acg acg gtt gcc acg | 768 |
| | His Leu Asn Ser Thr Ser Val Asn Glu Thr Glu Thr Thr Val Ala Thr | |
| | 245 250 255 | |
| 30 | tgg caa gat cag tgg gaa gat gtt att gaa cgc aaa gca aga tcc cga | 816 |
| | Trp Gln Asp Gln Trp Glu Asp Val Ile Glu Arg Lys Ala Arg Ser Arg | |
| | 260 265 270 | |
| | aga gct gcc aac tct tgg gat cac tat gtt gaa gtc ctt gtg gtg gcg | 864 |
| | Arg Ala Ala Asn Ser Trp Asp His Tyr Val Glu Val Leu Val Val Ala | |
| | 275 280 285 | |
| 35 | gat aca aaa atg tac gaa tat cac gga aga tct ctt gaa gac tac gtt | 912 |
| | Asp Thr Lys Met Tyr Glu Tyr His Gly Arg Ser Leu Glu Asp Tyr Val | |
| | 290 295 300 | |
| | ctc act ctc ttc tcc aca gtt gcc tcc atc tat cgt cac caa tcc ctt | 960 |
| | Leu Thr Leu Phe Ser Thr Val Ala Ser Ile Tyr Arg His Gln Ser Leu | |
| | 305 310 315 320 | |
| 40 | cgt gca tct atc aat gtc gtt gtt gtc aag ttg atc gtt ttg aaa acg | 1008 |
| | Arg Ala Ser Ile Asn Val Val Val Val Lys Leu Ile Val Leu Lys Thr | |
| | 325 330 335 | |

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|----|---|------|
| | gaa aac gct gga cca cga atc act cag aac gct caa caa aca ctt caa | 1056 |
| | Glu Asn Ala Gly Pro Arg Ile Thr Gln Asn Ala Gln Gln Thr Leu Gln | |
| | 340 345 350 | |
| 5 | gat ttc tgt aga tgg cag cag tat tac aat gat cca gat gat tcg agt | 1104 |
| | Asp Phe Cys Arg Trp Gln Gln Tyr Tyr Asn Asp Pro Asp Asp Ser Ser | |
| | 355 360 365 | |
| | gtc caa cat cat gac gtt gca atc ctt ttg acg cgt aaa gat att tgt | 1152 |
| | Val Gln His His Asp Val Ala Ile Leu Leu Thr Arg Lys Asp Ile Cys | |
| | 370 375 380 | |
| 10 | cga tca caa gga aaa tgc gat aca ctt gga ctt gct gaa ctt gga aca | 1200 |
| | Arg Ser Gln Gly Lys Cys Asp Thr Leu Gly Leu Ala Glu Leu Gly Thr | |
| | 385 390 395 400 | |
| 15 | atg tgt gat atg caa aaa agt tgt gca atc ata gaa gac aat gga ttg | 1248 |
| | Met Cys Asp Met Gln Lys Ser Cys Ala Ile Ile Glu Asp Asn Gly Leu | |
| | 405 410 415 | |
| | agt gct gca ttc aca att gct cat gaa ttg ggt cat gtg ttt tcg att | 1296 |
| | Ser Ala Ala Phe Thr Ile Ala His Glu Leu Gly His Val Phe Ser Ile | |
| | 420 425 430 | |
| 20 | cct cat gat gac gaa cga aaa tgc tct acc tac atg ccg gtt aat aag | 1344 |
| | Pro His Asp Asp Glu Arg Lys Cys Ser Thr Tyr Met Pro Val Asn Lys | |
| | 435 440 445 | |
| | aac aac ttc cac ata atg gca cca acg ttg gaa tat aac act cat cca | 1392 |
| | Asn Asn Phe His Ile Met Ala Pro Thr Leu Glu Tyr Asn Thr His Pro | |
| | 450 455 460 | |
| 25 | tgg agt tgg tcg cca tgt tca gct gga atg ctc gaa cga ttc ctc gaa | 1440 |
| | Trp Ser Trp Ser Pro Cys Ser Ala Gly Met Leu Glu Arg Phe Leu Glu | |
| | 465 470 475 480 | |
| 30 | aat aat cga ggt caa act caa tgt cta ttc gat cag ccg gtc gaa cgt | 1488 |
| | Asn Asn Arg Gly Gln Thr Gln Cys Leu Phe Asp Gln Pro Val Glu Arg | |
| | 485 490 495 | |
| | cgt tac tac gag gat gtc ttt gta cgt gat gaa cca gga aag aaa tac | 1536 |
| | Arg Tyr Tyr Glu Asp Val Phe Val Arg Asp Glu Pro Gly Lys Lys Tyr | |
| | 500 505 510 | |
| 35 | gat gct cat caa cag tgc aag ttt gta ttt gga cca gct tct gag ttg | 1584 |
| | Asp Ala His Gln Gln Cys Lys Phe Val Phe Gly Pro Ala Ser Glu Leu | |
| | 515 520 525 | |
| | tgc cct tat atg ccg aca tgc cgc cgt ctt tgg tgt gca aca ttc tac | 1632 |
| | Cys Pro Tyr Met Pro Thr Cys Arg Arg Leu Trp Cys Ala Thr Phe Tyr | |
| | 530 535 540 | |
| 40 | gga agc cag atg ggc tgt cga act cag cat atg cca tgg gcc gac gga | 1680 |
| | Gly Ser Gln Met Gly Cys Arg Thr Gln His Met Pro Trp Ala Asp Gly | |
| | 545 550 555 560 | |

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| | act cct tgt gac gaa tca aga agc atg ttc tgt cat cat gga gcc tgt | 1728 |
| | Thr Pro Cys Asp Glu Ser Arg Ser Met Phe Cys His His Gly Ala Cys | |
| | 565 570 575 | |
| 5 | gtt cgt cta gcc ccc gaa tcc ctt acc aaa att gac gga caa tgg ggt | 1776 |
| | Val Arg Leu Ala Pro Glu Ser Leu Thr Lys Ile Asp Gly Gln Trp Gly | |
| | 580 585 590 | |
| | gac tgg cga tca tgg gga gaa tgc agt cgt act tgt ggt ggt ggt gtt | 1824 |
| | Asp Trp Arg Ser Trp Gly Glu Cys Ser Arg Thr Cys Gly Gly Gly Val | |
| | 595 600 605 | |
| 10 | caa aaa gga tta aga gat tgt gac agc cca aaa cct cga aat ggt gga | 1872 |
| | Gln Lys Gly Leu Arg Asp Cys Asp Ser Pro Lys Pro Arg Asn Gly Gly | |
| | 610 615 620 | |
| | aag tac tgt gtt ggt caa cga gaa cgt tat cgg tca tgt aat aca caa | 1920 |
| | Lys Tyr Cys Val Gly Gln Arg Glu Arg Tyr Arg Ser Cys Asn Thr Gln | |
| 15 | 625 630 635 640 | |
| | gaa tgc cca tgg gat act caa cca tac cgt gaa gtt caa tgt tct gaa | 1968 |
| | Glu Cys Pro Trp Asp Thr Gln Pro Tyr Arg Glu Val Gln Cys Ser Glu | |
| | 645 650 655 | |
| | ttc aac aat aaa gat att gga atc caa ggt gtc gct tca acg aat act | 2016 |
| 20 | Phe Asn Asn Lys Asp Ile Gly Ile Gln Gly Val Ala Ser Thr Asn Thr | |
| | 660 665 670 | |
| | cac tgg gtt cca aaa tat gcg aat gtt gca cca aat gaa cgt tgc aag | 2064 |
| | His Trp Val Pro Lys Tyr Ala Asn Val Ala Pro Asn Glu Arg Cys Lys | |
| | 675 680 685 | |
| 25 | ctg tat tgt cgg ctc agt gga tct gca gcg ttc tat ctg ctt cga gat | 2112 |
| | Leu Tyr Cys Arg Leu Ser Gly Ser Ala Ala Phe Tyr Leu Leu Arg Asp | |
| | 690 695 700 | |
| | aaa gtt gtt gat gga aca cca tgt gat aga aat gga gac gat att tgt | 2160 |
| | Lys Val Val Asp Gly Thr Pro Cys Asp Arg Asn Gly Asp Asp Ile Cys | |
| 30 | 705 710 715 720 | |
| | gta gct gga gct tgt atg cca gca ggc tgt gat cat caa ctt cat tca | 2208 |
| | Val Ala Gly Ala Cys Met Pro Ala Gly Cys Asp His Gln Leu His Ser | |
| | 725 730 735 | |
| | act ctc cga aga gac aaa tgt ggt gtt tgc ggt ggg gat gat tct tcc | 2256 |
| 35 | Thr Leu Arg Arg Asp Lys Cys Gly Val Cys Gly Gly Asp Asp Ser Ser | |
| | 740 745 750 | |
| | tgt aag gtt gtc aaa gga aca ttt aat gag caa gga acc ttt ggt tat | 2304 |
| | Cys Lys Val Val Lys Gly Thr Phe Asn Glu Gln Gly Thr Phe Gly Tyr | |
| | 755 760 765 | |
| 40 | aac gaa gta atg aag att cca gct ggt tct gca aat att gat atc cgg | 2352 |
| | Asn Glu Val Met Lys Ile Pro Ala Gly Ser Ala Asn Ile Asp Ile Arg | |
| | 770 775 780 | |

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|----|-----|-----|-----|-----|-----|-----|------|-----|-----|-----|-----|------|-----|-----|-----|-----|------|
| | cag | aaa | gga | tat | aat | aat | atg | aaa | gaa | gat | gac | aat | tat | ctt | tct | ctc | 2400 |
| | Gln | Lys | Gly | Tyr | Asn | Asn | Met | Lys | Glu | Asp | Asp | Asn | Tyr | Leu | Ser | Leu | |
| | 785 | | | | | 790 | | | | | 795 | | | | | 800 | |
| 5 | cgt | gcc | gcc | aat | ggc | gaa | ttc | cta | ctt | aac | ggc | cat | ttc | caa | gta | tca | 2448 |
| | Arg | Ala | Ala | Asn | Gly | Glu | Phe | Leu | Leu | Asn | Gly | His | Phe | Gln | Val | Ser | |
| | | | | | 805 | | | | | 810 | | | | | 815 | | |
| | ctg | gct | cgc | caa | caa | att | gca | ttc | caa | gac | act | gtt | ctc | gaa | tat | tct | 2496 |
| | Leu | Ala | Arg | Gln | Gln | Ile | Ala | Phe | Gln | Asp | Thr | Val | Leu | Glu | Tyr | Ser | |
| | | | | 820 | | | | | 825 | | | | | 830 | | | |
| 10 | ggc | tct | gat | gca | att | att | gaa | cgc | ata | aat | gga | act | ggc | ccg | att | aga | 2544 |
| | Gly | Ser | Asp | Ala | Ile | Ile | Glu | Arg | Ile | Asn | Gly | Thr | Gly | Pro | Ile | Arg | |
| | | | 835 | | | | | 840 | | | | | 845 | | | | |
| 15 | agc | gac | att | tat | gtt | cat | gtt | ctt | tct | gtt | ggc | agc | cat | cca | ccc | gac | 2592 |
| | Ser | Asp | Ile | Tyr | Val | His | Val | Leu | Ser | Val | Gly | Ser | His | Pro | Pro | Asp | |
| | | 850 | | | | | 855 | | | | | 860 | | | | | |
| | atc | tca | tat | gag | tac | atg | act | gcg | gct | gtt | cca | aat | gct | gta | att | cgc | 2640 |
| | Ile | Ser | Tyr | Glu | Tyr | Met | Thr | Ala | Ala | Val | Pro | Asn | Ala | Val | Ile | Arg | |
| | 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| 20 | cca | ata | tcc | agc | gca | ttg | tat | ttg | tgg | aga | gtt | acg | gat | act | tgg | aca | 2688 |
| | Pro | Ile | Ser | Ser | Ala | Leu | Tyr | Leu | Trp | Arg | Val | Thr | Asp | Thr | Trp | Thr | |
| | | | | | 885 | | | | | 890 | | | | | 895 | | |
| | gaa | tgt | gat | aga | gcc | tgt | cgc | gga | cag | caa | tcg | caa | aaa | tta | atg | tgt | 2736 |
| | Glu | Cys | Asp | Arg | Ala | Cys | Arg | Gly | Gln | Gln | Ser | Gln | Lys | Leu | Met | Cys | |
| | | | | 900 | | | | | 905 | | | | | 910 | | | |
| 25 | ctg | gac | atg | tcg | act | cat | cgc | caa | agc | cat | gat | aga | aat | tgt | caa | aat | 2784 |
| | Leu | Asp | Met | Ser | Thr | His | Arg | Gln | Ser | His | Asp | Arg | Asn | Cys | Gln | Asn | |
| | | | 915 | | | | | 920 | | | | | 925 | | | | |
| 30 | gtt | ctc | aaa | cca | aaa | caa | gca | aca | cga | atg | tgc | aat | ata | gat | tgt | tct | 2832 |
| | Val | Leu | Lys | Pro | Lys | Gln | Ala | Thr | Arg | Met | Cys | Asn | Ile | Asp | Cys | Ser | |
| | | 930 | | | | 935 | | | | | | 940 | | | | | |
| | aca | aga | tgg | atc | act | gaa | gat | gtg | tct | agc | tgt | agc | gcc | aaa | tgt | gga | 2880 |
| | Thr | Arg | Trp | Ile | Thr | Glu | Asp | Val | Ser | Ser | Cys | Ser | Ala | Lys | Cys | Gly | |
| | 945 | | | | | 950 | | | | | 955 | | | | | 960 | |
| 35 | tct | gga | cag | aaa | cgc | caa | cga | gtt | tct | tgc | gta | aaa | atg | gag | ggc | gat | 2928 |
| | Ser | Gly | Gln | Lys | Arg | Gln | Arg | Val | Ser | Cys | Val | Lys | Met | Glu | Gly | Asp | |
| | | | | | 965 | | | | | 970 | | | | | 975 | | |
| | cgc | caa | act | cca | gca | tcc | gaa | cat | cta | tgt | gat | cgc | aat | tca | aaa | cca | 2976 |
| | Arg | Gln | Thr | Pro | Ala | Ser | Glu | His | Leu | Cys | Asp | Arg | Asn | Ser | Lys | Pro | |
| | | | | 980 | | | | | 985 | | | | | 990 | | | |
| 40 | tcc | gat | att | gcc | agc | tgt | tac | att | gac | tgc | tct | gga | aga | aaa | tgg | aac | 3024 |
| | Ser | Asp | Ile | Ala | Ser | Cys | Tyr | Ile | Asp | Cys | Ser | Gly | Arg | Lys | Trp | Asn | |
| | | | 995 | | | | 1000 | | | | | 1005 | | | | | |

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|----|---|------|
| | tat gga gaa tgg act tca tgt tct gaa act tgc gga tcg aat gga aaa | 3072 |
| | Tyr Gly Glu Trp Thr Ser Cys Ser Glu Thr Cys Gly Ser Asn Gly Lys | |
| | 1010 1015 1020 | |
| 5 | atg cat cgg aag tca tat tgc gtt gat gat tcg aat cgt cga gtt gat | 3120 |
| | Met His Arg Lys Ser Tyr Cys Val Asp Asp Ser Asn Arg Arg Val Asp | |
| | 1025 1030 1035 1040 | |
| | gag tca ttg tgc ggc aga gaa cag aaa gag gcg aca gaa cgg gaa tgt | 3168 |
| | Glu Ser Leu Cys Gly Arg Glu Gln Lys Glu Ala Thr Glu Arg Glu Cys | |
| | 1045 1050 1055 | |
| 10 | aac aga att cca tgt cca aga tgg gtt tat ggg cat tgg tca gag tgc | 3216 |
| | Asn Arg Ile Pro Cys Pro Arg Trp Val Tyr Gly His Trp Ser Glu Cys | |
| | 1060 1065 1070 | |
| 15 | tct cga agt tgt gat ggt gga gtc aaa atg cgt cat gct caa tgt ttg | 3264 |
| | Ser Arg Ser Cys Asp Gly Gly Val Lys Met Arg His Ala Gln Cys Leu | |
| | 1075 1080 1085 | |
| | gat gca gcc gat cgg gaa aca cat aca tcc aga tgt ggt cca gca cag | 3312 |
| | Asp Ala Ala Asp Arg Glu Thr His Thr Ser Arg Cys Gly Pro Ala Gln | |
| | 1090 1095 1100 | |
| 20 | aca caa gaa cat tgt aat gaa cat gct tgt act tgg tgg cag ttc gga | 3360 |
| | Thr Gln Glu His Cys Asn Glu His Ala Cys Thr Trp Trp Gln Phe Gly | |
| | 1105 1110 1115 1120 | |
| | gtc tgg tct gac tgc tca gct aag tgt gga gat ggt gta cag tat cga | 3408 |
| | Val Trp Ser Asp Cys Ser Ala Lys Cys Gly Asp Gly Val Gln Tyr Arg | |
| | 1125 1130 1135 | |
| 25 | gac gct aat tgt acc gat cgt cat aga tca gta cta ccg gaa cat cgt | 3456 |
| | Asp Ala Asn Cys Thr Asp Arg His Arg Ser Val Leu Pro Glu His Arg | |
| | 1140 1145 1150 | |
| 30 | tgc ctt aaa atg gaa aag ata att aca aaa cca tgt cat aga gaa tca | 3504 |
| | Cys Leu Lys Met Glu Lys Ile Ile Thr Lys Pro Cys His Arg Glu Ser | |
| | 1155 1160 1165 | |
| | tgt cca aaa tat aaa ctt gga gaa tgg tct cag tgt agt gtt tct tgt | 3552 |
| | Cys Pro Lys Tyr Lys Leu Gly Glu Trp Ser Gln Cys Ser Val Ser Cys | |
| | 1170 1175 1180 | |
| 35 | gag gat gga tgg tcg tca aga aga gtt tca tgt gtt tct gga aat gga | 3600 |
| | Glu Asp Gly Trp Ser Ser Arg Arg Val Ser Cys Val Ser Gly Asn Gly | |
| | 1185 1190 1195 1200 | |
| | act gaa gtc gat atg tca ctt tgt ggt act gca tct gat cgg cct gct | 3648 |
| | Thr Glu Val Asp Met Ser Leu Cys Gly Thr Ala Ser Asp Arg Pro Ala | |
| | 1205 1210 1215 | |
| 40 | tct cat cag aca tgt aat tta ggc act tgc cca ttt tgg aga aat act | 3696 |
| | Ser His Gln Thr Cys Asn Leu Gly Thr Cys Pro Phe Trp Arg Asn Thr | |
| | 1220 1225 1230 | |

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|----|--|------|
| | gat tgg agt gct tgt tct gta tct tgt gga atc ggt cat cgg gaa cgt Asp Trp Ser Ala Cys Ser Val Ser Cys Gly Ile Gly His Arg Glu Arg | 3744 |
| | 1235 1240 1245 | |
| 5 | aca acc gaa tgc ata tac cgc gaa caa tct gtt gat gct tct ttt tgt Thr Thr Glu Cys Ile Tyr Arg Glu Gln Ser Val Asp Ala Ser Phe Cys | 3792 |
| | 1250 1255 1260 | |
| | gga gat acc aaa atg cca gaa act agt caa act tgc cat ctt ctg cca Gly Asp Thr Lys Met Pro Glu Thr Ser Gln Thr Cys His Leu Leu Pro | 3840 |
| | 1265 1270 1275 1280 | |
| 10 | tgt aca tct tgg aaa cca agt cat tgg tcc cct tgc tca gtc act tgt Cys Thr Ser Trp Lys Pro Ser His Trp Ser Pro Cys Ser Val Thr Cys | 3888 |
| | 1285 1290 1295 | |
| 15 | gga tca gga att cag act aga agt gtt tgc tgt act cgt gga tct gaa Gly Ser Gly Ile Gln Thr Arg Ser Val Ser Cys Thr Arg Gly Ser Glu | 3936 |
| | 1300 1305 1310 | |
| | gga act att gtt gat gaa tat ttt tgt gat cga aat act cgt cca cgc Gly Thr Ile Val Asp Glu Tyr Phe Cys Asp Arg Asn Thr Arg Pro Arg | 3984 |
| | 1315 1320 1325 | |
| 20 | cta aaa aag act tgt gaa aaa gat act tgt gat ggg ccc aga gta ctt Leu Lys Lys Thr Cys Glu Lys Asp Thr Cys Asp Gly Pro Arg Val Leu | 4032 |
| | 1330 1335 1340 | |
| | caa aaa ctt caa gcc gac gta cca cca atc cga tgg gca acc gga cca Gln Lys Leu Gln Ala Asp Val Pro Pro Ile Arg Trp Ala Thr Gly Pro | 4080 |
| | 1345 1350 1355 1360 | |
| 25 | tgg aca gcc tgt tca gca act tgt ggt aat ggt act caa cgt cgt ctt Trp Thr Ala Cys Ser Ala Thr Cys Gly Asn Gly Thr Gln Arg Arg Leu | 4128 |
| | 1365 1370 1375 | |
| 30 | ctc aag tgc cga gat cat gtt cgt gat ctt cct gat gag tat tgc aat Leu Lys Cys Arg Asp His Val Arg Asp Leu Pro Asp Glu Tyr Cys Asn | 4176 |
| | 1380 1385 1390 | |
| | cat ttg gat aag gaa gta tca aca aga aat tgt cgc ctt cgt gat tgt His Leu Asp Lys Glu Val Ser Thr Arg Asn Cys Arg Leu Arg Asp Cys | 4224 |
| | 1395 1400 1405 | |
| 35 | tca tac tgg aaa atg gcg gaa tgg gaa gag tgt cca gct act tgt gga Ser Tyr Trp Lys Met Ala Glu Trp Glu Glu Cys Pro Ala Thr Cys Gly | 4272 |
| | 1410 1415 1420 | |
| | act cat gtt caa caa agt aga aat gtt aca tgc gtc agt gcg gaa gac Thr His Val Gln Gln Ser Arg Asn Val Thr Cys Val Ser Ala Glu Asp | 4320 |
| | 1425 1430 1435 1440 | |
| 40 | ggt ggt cgg acg att ttg aaa gat gtt gat tgt gat gtg caa aag aga Gly Gly Arg Thr Ile Leu Lys Asp Val Asp Cys Asp Val Gln Lys Arg | 4368 |
| | 1445 1450 1455 | |

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|----|---|------|
| | cca aca agt gca aga aat tgc cga ctt gaa ccc tgt cca aag gga gaa | 4416 |
| | Pro Thr Ser Ala Arg Asn Cys Arg Leu Glu Pro Cys Pro Lys Gly Glu | |
| | 1460 1465 1470 | |
| 5 | gaa cat att gga tcc tgg att att gga gat tgg tca aaa tgc tct gct | 4464 |
| | Glu His Ile Gly Ser Trp Ile Ile Gly Asp Trp Ser Lys Cys Ser Ala | |
| | 1475 1480 1485 | |
| | tct tgt ggt ggg gga tgg cgt cgt cgc agt gta tct tgc act tcg tct | 4512 |
| | Ser Cys Gly Gly Gly Trp Arg Arg Arg Ser Val Ser Cys Thr Ser Ser | |
| | 1490 1495 1500 | |
| 10 | tct tgc gat gaa acc aga aaa cca aag atg ttt gat aaa tgc aat gaa | 4560 |
| | Ser Cys Asp Glu Thr Arg Lys Pro Lys Met Phe Asp Lys Cys Asn Glu | |
| | 1505 1510 1515 1520 | |
| 15 | gaa cta tgt cca cca ctc aca aat aat tct tgg cag ata tct cca tgg | 4608 |
| | Glu Leu Cys Pro Pro Leu Thr Asn Asn Ser Trp Gln Ile Ser Pro Trp | |
| | 1525 1530 1535 | |
| | act cac tgt tct gta tcg tgt ggc ggg gga gtt caa cgc cgc aaa atc | 4656 |
| | Thr His Cys Ser Val Ser Cys Gly Gly Gly Val Gln Arg Arg Lys Ile | |
| | 1540 1545 1550 | |
| 20 | tgg tgt gaa gac gtg ctt tcc ggt cgt aaa caa gac gat atc gag tgc | 4704 |
| | Trp Cys Glu Asp Val Leu Ser Gly Arg Lys Gln Asp Asp Ile Glu Cys | |
| | 1555 1560 1565 | |
| | tca gag att aag cct cgc gaa caa aga gat tgt gaa atg cct cca tgc | 4752 |
| | Ser Glu Ile Lys Pro Arg Glu Gln Arg Asp Cys Glu Met Pro Pro Cys | |
| | 1570 1575 1580 | |
| 25 | cga tct cat tat cac aac aaa aca tca tca gca tca atg aca tca tta | 4800 |
| | Arg Ser His Tyr His Asn Lys Thr Ser Ser Ala Ser Met Thr Ser Leu | |
| | 1585 1590 1595 1600 | |
| 30 | tca tct tcg aat tca aat acg acg tct tcc gct tcc gct tct tcg ctt | 4848 |
| | Ser Ser Ser Asn Ser Asn Thr Thr Ser Ser Ala Ser Ala Ser Ser Leu | |
| | 1605 1610 1615 | |
| | cct atc ctt cca ccc gtc gtc tcc tgg caa acg tct gca tgg agc gcg | 4896 |
| | Pro Ile Leu Pro Pro Val Val Ser Trp Gln Thr Ser Ala Trp Ser Ala | |
| | 1620 1625 1630 | |
| 35 | tgt tct gca aaa tgc ggt cgt gga acg aaa cga aga gtt gtc gaa tgt | 4944 |
| | Cys Ser Ala Lys Cys Gly Arg Gly Thr Lys Arg Arg Val Val Glu Cys | |
| | 1635 1640 1645 | |
| | gta aat cca tca tta aat gtg aca gtg gca agt aca gaa tgt gat caa | 4992 |
| | Val Asn Pro Ser Leu Asn Val Thr Val Ala Ser Thr Glu Cys Asp Gln | |
| | 1650 1655 1660 | |
| 40 | acg aag aaa cca gtt gaa gaa gtt cgt tgt cgt act aaa cat tgc ccg | 5040 |
| | Thr Lys Lys Pro Val Glu Glu Val Arg Cys Arg Thr Lys His Cys Pro | |
| | 1665 1670 1675 1680 | |

| | | | | | | | | | | | | | | | | | |
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| | Arg | Trp | Lys | Thr | Thr | Thr | Trp | Ser | Ser | Cys | Ser | Val | Thr | Cys | Gly | Arg | |
| | | | | 1685 | | | | | 1690 | | | | | | 1695 | | |
| 5 | gga | atc | aga | cgt | cgt | gaa | gtt | caa | tgt | tat | cgt | ggg | cgc | aag | aat | ttg | 5136 |
| | Gly | Ile | Arg | Arg | Arg | Glu | Val | Gln | Cys | Tyr | Arg | Gly | Arg | Lys | Asn | Leu | |
| | | | | 1700 | | | | 1705 | | | | | | 1710 | | | |
| | gtg | tct | gat | tcg | gag | tgc | aat | cca | aaa | act | aag | ctc | aac | tct | gtt | gcc | 5184 |
| | Val | Ser | Asp | Ser | Glu | Cys | Asn | Pro | Lys | Thr | Lys | Leu | Asn | Ser | Val | Ala | |
| | | | 1715 | | | | 1720 | | | | | 1725 | | | | | |
| 10 | aac | tgt | ttc | cca | gtg | gct | tgt | cca | gct | tat | aga | tgg | aat | gtt | act | cca | 5232 |
| | Asn | Cys | Phe | Pro | Val | Ala | Cys | Pro | Ala | Tyr | Arg | Trp | Asn | Val | Thr | Pro | |
| | | 1730 | | | | 1735 | | | | 1740 | | | | | | | |
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| | cgg | gtg | cac | tgt | ata | agc | act | tct | ggg | aaa | cga | gca | gct | cca | cga | atg | 5328 |
| | Arg | Val | His | Cys | Ile | Ser | Thr | Ser | Gly | Lys | Arg | Ala | Ala | Pro | Arg | Met | |
| | | | | 1765 | | | | 1770 | | | | | | 1775 | | | |
| | tgt | gaa | ttg | gct | cgt | gca | cca | act | tcg | atc | aga | gag | tgc | gat | aca | tca | 5376 |
| 20 | Cys | Glu | Leu | Ala | Arg | Ala | Pro | Thr | Ser | Ile | Arg | Glu | Cys | Asp | Thr | Ser | |
| | | | 1780 | | | | 1785 | | | | | 1790 | | | | | |
| | aat | tgt | cca | tat | gag | tgg | gtg | cca | gga | gat | tgg | caa | acg | tgt | tca | aag | 5424 |
| | Asn | Cys | Pro | Tyr | Glu | Trp | Val | Pro | Gly | Asp | Trp | Gln | Thr | Cys | Ser | Lys | |
| | | | 1795 | | | | 1800 | | | | | 1805 | | | | | |
| 25 | tca | tgt | gga | gaa | gga | gta | cag | aca | cga | gaa | gtc | aga | tgt | cgt | aga | aag | 5472 |
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| | | 1810 | | | | 1815 | | | | 1820 | | | | | | | |
| | att | aat | ttt | aac | tca | acc | att | cca | att | ata | ttt | atg | ctc | gaa | gat | gaa | 5520 |
| | Ile | Asn | Phe | Asn | Ser | Thr | Ile | Pro | Ile | Ile | Phe | Met | Leu | Glu | Asp | Glu | |
| 30 | 1825 | | | | 1830 | | | | | 1835 | | | | 1840 | | | |
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| | Pro | Ala | Val | Pro | Lys | Glu | Lys | Cys | Glu | Leu | Phe | Pro | Lys | Pro | Asn | Glu | |
| | | | | 1845 | | | | 1850 | | | | | | 1855 | | | |
| | tct | caa | acg | tgc | gaa | ctt | aac | cca | tgc | gat | tcg | gaa | ttc | aaa | tgg | agt | 5616 |
| 35 | Ser | Gln | Thr | Cys | Glu | Leu | Asn | Pro | Cys | Asp | Ser | Glu | Phe | Lys | Trp | Ser | |
| | | | 1860 | | | | 1865 | | | | | 1870 | | | | | |
| | ttc | gga | cca | tgg | ggg | gaa | tgc | tcg | aaa | aat | tgc | ggg | caa | ggg | att | cga | 5664 |
| | Phe | Gly | Pro | Trp | Gly | Glu | Cys | Ser | Lys | Asn | Cys | Gly | Gln | Gly | Ile | Arg | |
| | | | 1875 | | | 1880 | | | | | 1885 | | | | | | |
| 40 | cgt | cga | cgt | gtc | aag | tgt | gtg | gcc | aat | gat | ggg | cgt | cga | gtt | gaa | cga | 5712 |
| | Arg | Arg | Arg | Val | Lys | Cys | Val | Ala | Asn | Asp | Gly | Arg | Arg | Val | Glu | Arg | |
| | | 1890 | | | | 1895 | | | | 1900 | | | | | | | |

| | | | | | | | | | | | | | | | | | |
|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| | gtc | aag | tgt | acc | aca | aag | aaa | cca | cgt | cga | act | caa | tat | tgt | ttt | gaa | 5760 |
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| | 1905 | | | | | 1910 | | | | | 1915 | | | | | 1920 | |
| 5 | aga | aat | tgc | ctt | ccg | tca | act | tgt | cag | gag | ctt | aaa | tct | cag | aat | gtt | 5808 |
| | Arg | Asn | Cys | Leu | Pro | Ser | Thr | Cys | Gln | Glu | Leu | Lys | Ser | Gln | Asn | Val | |
| | | | | 1925 | | | | | 1930 | | | | | 1935 | | | |
| | aag | gct | aaa | gat | gga | aat | tac | act | att | ctt | ctt | gac | gga | ttc | act | att | 5856 |
| | Lys | Ala | Lys | Asp | Gly | Asn | Tyr | Thr | Ile | Leu | Leu | Asp | Gly | Phe | Thr | Ile | |
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| | Glu | Ile | Tyr | Cys | His | Arg | Met | Asn | Ser | Thr | Ile | Pro | Lys | Ala | Tyr | Leu | |
| | | 1955 | | | | | 1960 | | | | | 1965 | | | | | |
| | aac | gtt | aat | cca | aga | acc | aat | ttt | gca | gag | gtt | tat | gga | aaa | aaa | tta | 5952 |
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| | 1970 | | | | | 1975 | | | | | | 1980 | | | | | |
| | ata | tac | cct | cat | act | tgc | cca | ttt | aat | ggg | gat | cgt | aat | gat | tca | tgc | 6000 |
| | Ile | Tyr | Pro | His | Thr | Cys | Pro | Phe | Asn | Gly | Asp | Arg | Asn | Asp | Ser | Cys | |
| | 1985 | | | | 1990 | | | | | 1995 | | | | | | 2000 | |
| 20 | cat | tgt | tca | gaa | gac | ggc | gat | gca | agt | gct | gga | ttg | acg | aga | ttc | aat | 6048 |
| | His | Cys | Ser | Glu | Asp | Gly | Asp | Ala | Ser | Ala | Gly | Leu | Thr | Arg | Phe | Asn | |
| | | | | 2005 | | | | 2010 | | | | | | 2015 | | | |
| | aaa | gtt | cga | ata | gat | ttg | ttg | aat | aga | aag | ttc | cat | ctg | gcg | gat | tat | 6096 |
| | Lys | Val | Arg | Ile | Asp | Leu | Leu | Asn | Arg | Lys | Phe | His | Leu | Ala | Asp | Tyr | |
| | | | 2020 | | | | | 2025 | | | | | 2030 | | | | |
| 25 | aca | ttt | gca | aaa | cga | gaa | tat | ggg | gtt | cat | gtg | cca | tat | ggg | act | gcc | 6144 |
| | Thr | Phe | Ala | Lys | Arg | Glu | Tyr | Gly | Val | His | Val | Pro | Tyr | Gly | Thr | Ala | |
| | | 2035 | | | | | 2040 | | | | | 2045 | | | | | |
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| 30 | Gly | Asp | Cys | Tyr | Ser | Met | Lys | Asp | Cys | Pro | Gln | Gly | Ile | Phe | Ser | Ile | |
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| | gat | tta | aaa | tct | gct | ggg | ctg | aaa | tta | gtt | gac | gat | ctg | aat | tgg | gag | 6240 |
| | Asp | Leu | Lys | Ser | Ala | Gly | Leu | Lys | Leu | Val | Asp | Asp | Leu | Asn | Trp | Glu | |
| | 2065 | | | | 2070 | | | | | 2075 | | | | | 2080 | | |
| 35 | gat | caa | ggg | cat | cga | aca | tcc | tct | cga | atc | gat | cgt | ttt | tat | aac | aat | 6288 |
| | Asp | Gln | Gly | His | Arg | Thr | Ser | Ser | Arg | Ile | Asp | Arg | Phe | Tyr | Asn | Asn | |
| | | | | 2085 | | | | 2090 | | | | | | 2095 | | | |
| | gca | aaa | gtt | att | ggg | cac | tgt | ggg | ggg | ttt | tgt | gga | aaa | tgc | tct | cct | 6336 |
| | Ala | Lys | Val | Ile | Gly | His | Cys | Gly | Gly | Phe | Cys | Gly | | | | | |

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2130 2135 2140

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2145 2150

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20 35 40 45
Lys Tyr Ser Gly Val Pro Val His His Ser Arg Trp Arg Gln Asp Ala
50 55 60
Gly Ile His Val Ile Asp Ser His His Ile Val Arg Arg Asp Ser Tyr
65 70 75 80

25 Gly Arg Arg Gly Lys Arg Asp Val Thr Ser Thr Asp Arg Arg Arg Arg
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Leu Gln Gly Val Ala Arg Asp Cys Gly His Ala Cys His Leu Arg Leu
100 105 110
Arg Ser Asp Asp Ala Val Tyr Ile Val His Leu His Arg Trp Asn Gln
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Ile Pro Asp Ser His Asn Lys Ser Val Pro His Phe Ser Asn Ser Asn
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Phe Ala Pro Met Val Leu Tyr Leu Asp Ser Glu Glu Glu Val Arg Gly
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Gly Val His Gln His Ser Ile Val Asn Leu Cys Asp Ser Glu Asp Gly
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Leu Tyr Gly Met Leu Ala Leu Pro Ser Gly Ile His Thr Val Glu Pro
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 Ile Ile Ser Gly Asn Gly Thr Glu His Asp Gly Ala Ser Arg His Arg
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 His Leu Asn Ser Thr Ser Val Asn Glu Thr Glu Thr Thr Val Ala Thr
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| | | | | | | | | | | | | | | | | | |
|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--|
| | Arg | Tyr | Tyr | Glu | Asp | Val | Phe | Val | Arg | Asp | Glu | Pro | Gly | Lys | Lys | Tyr | |
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| | Phe | Asn | Asn | Lys | Asp | Ile | Gly | Ile | Gln | Gly | Val | Ala | Ser | Thr | Asn | Thr | |
| | | | | 660 | | | | | 665 | | | | | | 670 | | |
| | His | Trp | Val | Pro | Lys | Tyr | Ala | Asn | Val | Ala | Pro | Asn | Glu | Arg | Cys | Lys | |
| | | | | 675 | | | | 680 | | | | | 685 | | | | |
| 25 | Leu | Tyr | Cys | Arg | Leu | Ser | Gly | Ser | Ala | Ala | Phe | Tyr | Leu | Leu | Arg | Asp | |
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| | Lys | Val | Val | Asp | Gly | Thr | Pro | Cys | Asp | Arg | Asn | Gly | Asp | Asp | Ile | Cys | |
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| 30 | Val | Ala | Gly | Ala | Cys | Met | Pro | Ala | Gly | Cys | Asp | His | Gln | Leu | His | Ser | |
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| | Thr | Leu | Arg | Arg | Asp | Lys | Cys | Gly | Val | Cys | Gly | Gly | Asp | Asp | Ser | Ser | |
| | | | | | 740 | | | | 745 | | | | | 750 | | | |
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| | 785 | | | | | 790 | | | | | 795 | | | | | 800 | |

| | | | | | | | | | | | | | | | | | |
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| | Arg | Ala | Ala | Asn | Gly | Glu | Phe | Leu | Leu | Asn | Gly | His | Phe | Gln | Val | Ser | |
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| | Leu | Ala | Arg | Gln | Gln | Ile | Ala | Phe | Gln | Asp | Thr | Val | Leu | Glu | Tyr | Ser | |
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| 5 | Gly | Ser | Asp | Ala | Ile | Ile | Glu | Arg | Ile | Asn | Gly | Thr | Gly | Pro | Ile | Arg | |
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| | 865 | | | | | 870 | | | | | 875 | | | | | 880 | |
| | Pro | Ile | Ser | Ser | Ala | Leu | Tyr | Leu | Trp | Arg | Val | Thr | Asp | Thr | Trp | Thr | |
| | | | | | 885 | | | | | 890 | | | | | 895 | | |
| | Glu | Cys | Asp | Arg | Ala | Cys | Arg | Gly | Gln | Gln | Ser | Gln | Lys | Leu | Met | Cys | |
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| | Asp | Ala | Ala | Asp | Arg | Glu | Thr | His | Thr | Ser | Arg | Cys | Gly | Pro | Ala | Gln | |
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 His Leu Asp Lys Glu Val Ser Thr Arg Asn Cys Arg Leu Arg Asp Cys
 1395 1400 1405

Ser Tyr Trp Lys Met Ala Glu Trp Glu Glu Cys Pro Ala Thr Cys Gly
 1410 1415 1420
 Thr His Val Gln Gln Ser Arg Asn Val Thr Cys Val Ser Ala Glu Asp
 1425 1430 1435 1440
 5 Gly Gly Arg Thr Ile Leu Lys Asp Val Asp Cys Asp Val Gln Lys Arg
 1445 1450 1455
 Pro Thr Ser Ala Arg Asn Cys Arg Leu Glu Pro Cys Pro Lys Gly Glu
 1460 1465 1470
 10 Glu His Ile Gly Ser Trp Ile Ile Gly Asp Trp Ser Lys Cys Ser Ala
 1475 1480 1485
 Ser Cys Gly Gly Gly Trp Arg Arg Arg Ser Val Ser Cys Thr Ser Ser
 1490 1495 1500
 Ser Cys Asp Glu Thr Arg Lys Pro Lys Met Phe Asp Lys Cys Asn Glu
 1505 1510 1515 1520
 15 Glu Leu Cys Pro Pro Leu Thr Asn Asn Ser Trp Gln Ile Ser Pro Trp
 1525 1530 1535
 Thr His Cys Ser Val Ser Cys Gly Gly Gly Val Gln Arg Arg Lys Ile
 1540 1545 1550
 Trp Cys Glu Asp Val Leu Ser Gly Arg Lys Gln Asp Asp Ile Glu Cys
 20 1555 1560 1565
 Ser Glu Ile Lys Pro Arg Glu Gln Arg Asp Cys Glu Met Pro Pro Cys
 1570 1575 1580
 Arg Ser His Tyr His Asn Lys Thr Ser Ser Ala Ser Met Thr Ser Leu
 1585 1590 1595 1600
 25 Ser Ser Ser Asn Ser Asn Thr Thr Ser Ser Ala Ser Ala Ser Ser Leu
 1605 1610 1615
 Pro Ile Leu Pro Pro Val Val Ser Trp Gln Thr Ser Ala Trp Ser Ala
 1620 1625 1630
 Cys Ser Ala Lys Cys Gly Arg Gly Thr Lys Arg Arg Val Val Glu Cys
 30 1635 1640 1645
 Val Asn Pro Ser Leu Asn Val Thr Val Ala Ser Thr Glu Cys Asp Gln
 1650 1655 1660
 Thr Lys Lys Pro Val Glu Glu Val Arg Cys Arg Thr Lys His Cys Pro
 1665 1670 1675 1680
 35 Arg Trp Lys Thr Thr Thr Trp Ser Ser Cys Ser Val Thr Cys Gly Arg
 1685 1690 1695
 Gly Ile Arg Arg Arg Glu Val Gln Cys Tyr Arg Gly Arg Lys Asn Leu
 1700 1705 1710

| | | |
|----|---|----------------|
| | Val Ser Asp Ser Glu Cys Asn Pro Lys Thr Lys Leu Asn Ser Val Ala | |
| | 1715 | 1720 1725 |
| | Asn Cys Phe Pro Val Ala Cys Pro Ala Tyr Arg Trp Asn Val Thr Pro | |
| | 1730 | 1735 1740 |
| 5 | Trp Ser Lys Cys Lys Asp Glu Cys Ala Arg Gly Gln Lys Gln Thr Arg | |
| | 1745 | 1750 1755 1760 |
| | Arg Val His Cys Ile Ser Thr Ser Gly Lys Arg Ala Ala Pro Arg Met | |
| | | 1765 1770 1775 |
| 10 | Cys Glu Leu Ala Arg Ala Pro Thr Ser Ile Arg Glu Cys Asp Thr Ser | |
| | 1780 | 1785 1790 |
| | Asn Cys Pro Tyr Glu Trp Val Pro Gly Asp Trp Gln Thr Cys Ser Lys | |
| | 1795 | 1800 1805 |
| | Ser Cys Gly Glu Gly Val Gln Thr Arg Glu Val Arg Cys Arg Arg Lys | |
| | 1810 | 1815 1820 |
| 15 | Ile Asn Phe Asn Ser Thr Ile Pro Ile Ile Phe Met Leu Glu Asp Glu | |
| | 1825 | 1830 1835 1840 |
| | Pro Ala Val Pro Lys Glu Lys Cys Glu Leu Phe Pro Lys Pro Asn Glu | |
| | | 1845 1850 1855 |
| 20 | Ser Gln Thr Cys Glu Leu Asn Pro Cys Asp Ser Glu Phe Lys Trp Ser | |
| | 1860 | 1865 1870 |
| | Phe Gly Pro Trp Gly Glu Cys Ser Lys Asn Cys Gly Gln Gly Ile Arg | |
| | 1875 | 1880 1885 |
| | Arg Arg Arg Val Lys Cys Val Ala Asn Asp Gly Arg Arg Val Glu Arg | |
| | 1890 | 1895 1900 |
| 25 | Val Lys Cys Thr Thr Lys Lys Pro Arg Arg Thr Gln Tyr Cys Phe Glu | |
| | 1905 | 1910 1915 1920 |
| | Arg Asn Cys Leu Pro Ser Thr Cys Gln Glu Leu Lys Ser Gln Asn Val | |
| | | 1925 1930 1935 |
| 30 | Lys Ala Lys Asp Gly Asn Tyr Thr Ile Leu Leu Asp Gly Phe Thr Ile | |
| | 1940 | 1945 1950 |
| | Glu Ile Tyr Cys His Arg Met Asn Ser Thr Ile Pro Lys Ala Tyr Leu | |
| | 1955 | 1960 1965 |
| | Asn Val Asn Pro Arg Thr Asn Phe Ala Glu Val Tyr Gly Lys Lys Leu | |
| | 1970 | 1975 1980 |
| 35 | Ile Tyr Pro His Thr Cys Pro Phe Asn Gly Asp Arg Asn Asp Ser Cys | |
| | 1985 | 1990 1995 2000 |
| | His Cys Ser Glu Asp Gly Asp Ala Ser Ala Gly Leu Thr Arg Phe Asn | |
| | | 2005 2010 2015 |

Lys Val Arg Ile Asp Leu Leu Asn Arg Lys Phe His Leu Ala Asp Tyr
 2020 2025 2030
 Thr Phe Ala Lys Arg Glu Tyr Gly Val His Val Pro Tyr Gly Thr Ala
 2035 2040 2045
 5 Gly Asp Cys Tyr Ser Met Lys Asp Cys Pro Gln Gly Ile Phe Ser Ile
 2050 2055 2060
 Asp Leu Lys Ser Ala Gly Leu Lys Leu Val Asp Asp Leu Asn Trp Glu
 2065 2070 2075 2080
 10 Asp Gln Gly His Arg Thr Ser Ser Arg Ile Asp Arg Phe Tyr Asn Asn
 2085 2090 2095
 Ala Lys Val Ile Gly His Cys Gly Gly Phe Cys Gly Lys Cys Ser Pro
 2100 2105 2110
 Glu Arg Tyr Lys Gly Leu Ile Phe Glu Val Asn Thr Lys Leu Leu Asn
 2115 2120 2125
 15 His Val Lys Asn Gly Gly His Ile Asp Asp Glu Leu Asp Asp Asp Gly
 2130 2135 2140
 Phe Ser Gly Asp Met Asp
 2145 2150